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الترابيات

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حاضرة 15

* POP → ① Authorization
② Transaction
③ Update

* IMAP → to solve some POP issues

* HTTP → not a substitute for SMTP; just to simplify the access via web browsers

POP

- ① username and password by client (Authorization)
- ② list, retrieve, delete, quit (transaction)
- ③ Update starts after quit (it check the operations and start processing after quit)

disadvantages

- ① stateless protocol
- ② Client oriented; modifications are local to each client

IMAP

- ① state protocol (يخزن حالة ال User الى ديفيات Protocol)
- ② Organize your mail box by allowing users to create folders; because it stores user's state

HTTP

- ① State (storage by cookies)
- ② organize (just like IMAP)
- ③ better user interface

⇒ DNS

* DNS

- Instead of remembering IDs, it's easier to associate names to IDs and remembering names. we can even change IDs for name.
- Each host name have corresponding name understood by the router "IP Address"
- The router understands the user address using the IP add.
- * DNS is responsible to translate Domain Names to IP addresses. Since each Domain has a corresponding IP
- * DNS is an application layer protocol, Hence, it does not work on routers.
- Host aliasing; many servers can ~~have~~ share the same alias; eg. we can log to amazon using the same URL, but each user will get different ~~IP~~ IP which prevent congestions on the servers.
- * mail servers can hold the same host name through aliasing

Centralized DNS issues

- ① Single Point of Failure
- ② traffic volume (Congestion)
- ③ Centralized database
- ④ Hard ~~maintain~~ maintenance

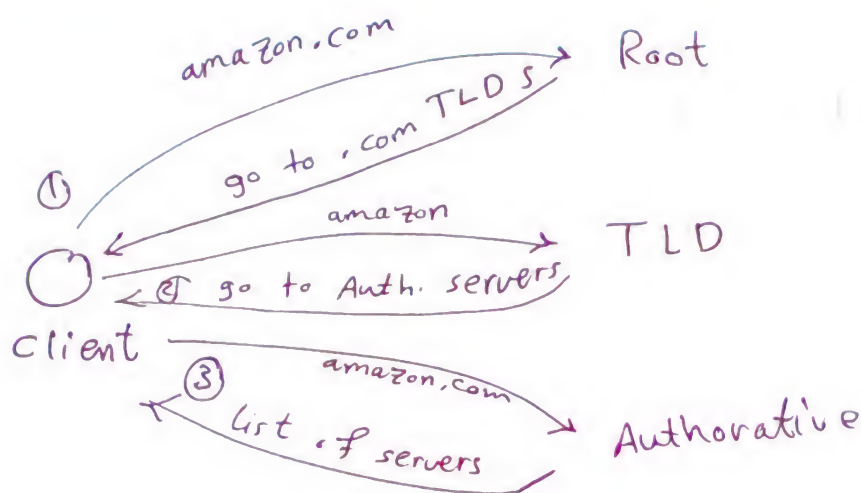
→ So, DNS is distributed in hierarchical structure divided to 3 Levels

- ① Root servers
- ② TLD (Top-Level domain) servers
- ③ Authoritative servers

- Root Servers (suffixes such as .com; .net; .org; --- etc.)
- TLD communicate with authoritative servers of websites.

amazon.com

- ↳ ① Root server redirect to .com TLD servers
- ② TLD servers redirect to amazon servers.
- ③ amazon servers then send list of servers



* Local DNS Server TLD کی جگہ پر بھی Local DNS کا Category ہے

not a part of DNS hierarchy.

located at ISP

- this acts as ~~web~~ cache (proxy server) for Domain Names

check 2.67 to understand the issue with DNS (8 steps)

- Since local DNS stores Domains; no recursive query (8 steps) and delay, processing and load on Root servers are greatly reduced

This introduces the issue of possible outdated domain-IP pair

- one solution is to update Local DNS when there is an issue, but this may not always be good

- TTL: Time to live record

DNS stores Resource Records with TTL

when TTL expires, Local DNS updates the record

TTL for big servers like amazon and google may differ from TTL of smaller companies

- Root Stores Suffix and corresponding TLD server

→ 2.70 Record ينفذ Type في الجذر، ارجع

type A → authoritative DNS

type NS → at Root and TLD database

C Name → (canonical name) host have more than one name

Root الجذر TLD

Mx → at TLD (Not sure)

DNS messages → 2.71

query / reply messages with the same format

رسائل في ال messages

Local DNS ← identification ①

query ← flags ② ← reply

check 2.72

آخر fields سترجم عند ال reply

additional additional info usually hold other server IPs

- DNS Uses UDP; messages are small and I care for SPEED :D

* P2P Applications :-

- * معنى P2P فيه اثنين end systems يعني كل واحد بيخدم الآخر، مش عندي نموذج
قديم للخدمة (client) و خادم (server) ؛ دور السيرفر هو تنظيم العملية
- * أشهر مثال هو Bit-torrent (file-sharing) .
- و VoIP زي (skype) .
- و streaming زي (kankan) .